

No.

200500347



# THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Montana Agricultural Experiment Station

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSE, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE ABOVE PURPOSE, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. IN THE UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBERS AND GENERATIONS SPECIFIED BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

WHEAT, COMMON

'MT1159CL'



In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this twenty-ninth day of September, in the year two thousand and six.

Attest:

*[Signature]*

Commissioner  
Plant Variety Protection Office  
Agricultural Marketing Service


*[Signature]*  
Secretary of Agriculture

U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE  
SCIENCE AND TECHNOLOGY - PLANT VARIETY PROTECTION OFFICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE  
(Instructions and information collection burden statement on reverse)

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF OWNER <b>Montana State University Agricultural Experiment Station</b>		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NAME <b>MTCL01159</b>		3. VARIETY NAME <b>MT1159CL</b>	
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country) <b>202 Linfield Hall Montana State University Bozeman, MT 59717</b>		5. TELEPHONE (include area code) <b>(406) 994-3681</b>		<b>FOR OFFICIAL USE ONLY</b> <b>PVPO NUMBER</b> <b>200500347</b> <b>FILING DATE</b> <b>Sept. 13, 2005</b>	
		6. FAX (include area code) <b>(406) 994-6579</b>			
7. IF THE OWNER NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION (corporation, partnership, association, etc.) <b>Experiment Station</b>		8. IF INCORPORATED, GIVE STATE OF INCORPORATION		9. DATE OF INCORPORATION	
10. NAME AND ADDRESS OF OWNER REPRESENTATIVE(S) TO SERVE IN THIS APPLICATION. (First person listed will receive all papers) <b>Phil L. Bruckner Plant Sciences &amp; Plant Pathology Department Montana State University Bozeman, MT 59717</b>				<b>FILING AND EXAMINATION FEES:</b> <b>\$ 3652.00</b> <b>DATE 9/13/2005</b> <b>CERTIFICATION FEE:</b> <b>\$ 768.00</b> <b>DATE 7/24/2006</b>	
11. TELEPHONE (include area code) <b>(406) 994-5127</b>		12. FAX (include area code) <b>(406) 994-1848</b>		13. E-MAIL <b>bruckner@montana.edu</b>	
14. CROP KIND (Common Name) <b>wheat, common</b>		16. FAMILY NAME (Botanical) <b>Triticeae</b>		18. DOES THE VARIETY CONTAIN ANY TRANSGENES? (OPTIONAL) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF SO, PLEASE GIVE THE ASSIGNED USDA-APHIS REFERENCE NUMBER FOR THE APPROVED PETITION TO DEREGULATE THE GENETICALLY MODIFIED PLANT FOR COMMERCIALIZATION.	
15. GENUS AND SPECIES NAME OF CROP <b>Triticum aestivum</b>		17. IS THE VARIETY A FIRST GENERATION HYBRID? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		20. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE SOLD AS A CLASS OF CERTIFIED SEED? (See Section 63(a) of the Plant Variety Protection Act) <input checked="" type="checkbox"/> YES (If "yes", answer items 21 and 22 below) <input type="checkbox"/> NO (If "no", go to item 23)	
19. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse)		21. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF CLASSES? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO IF YES, WHICH CLASSES? <input checked="" type="checkbox"/> FOUNDATION <input checked="" type="checkbox"/> REGISTERED <input checked="" type="checkbox"/> CERTIFIED			
a. <input checked="" type="checkbox"/> Exhibit A. Origin and Breeding History of the Variety		22. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, SPECIFY THE NUMBER 1,2,3, etc. FOR EACH CLASS. <input checked="" type="checkbox"/> FOUNDATION <input checked="" type="checkbox"/> REGISTERED <input checked="" type="checkbox"/> CERTIFIED (If additional explanation is necessary, please use the space indicated on the reverse.)			
b. <input checked="" type="checkbox"/> Exhibit B. Statement of Distinctness					
c. <input checked="" type="checkbox"/> Exhibit C. Objective Description of Variety					
d. <input checked="" type="checkbox"/> Exhibit D. Additional Description of the Variety (Optional)					
e. <input checked="" type="checkbox"/> Exhibit E. Statement of the Basis of the Owner's Ownership					
f. <input checked="" type="checkbox"/> Voucher Sample (2,500 viable untreated seeds or, for tuber propagated varieties, verification that tissue culture will be deposited and maintained in an approved public repository)					
g. <input checked="" type="checkbox"/> Filing and Examination Fee (\$3,652), made payable to "Treasurer of the United States" (Mail to the Plant Variety Protection Office) <b>Credit card</b>					
23. HAS THE VARIETY (INCLUDING ANY HARVESTED MATERIAL) OR A HYBRID PRODUCED FROM THIS VARIETY BEEN SOLD, DISPOSED OF, TRANSFERRED, OR USED IN THE U. S. OR OTHER COUNTRIES? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO IF YES, YOU MUST PROVIDE THE DATE OF FIRST SALE, DISPOSITION, TRANSFER, OR USE FOR EACH COUNTRY AND THE CIRCUMSTANCES. (Please use space indicated on reverse.)		24. IS THE VARIETY OR ANY COMPONENT OF THE VARIETY PROTECTED BY INTELLECTUAL PROPERTY RIGHT (PLANT BREEDER'S RIGHT OR PATENT)? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO IF YES, PLEASE GIVE COUNTRY, DATE OF FILING OR ISSUANCE AND ASSIGNED REFERENCE NUMBER. (Please use space indicated on reverse.)			
25. The owners declare that a viable sample of basic seed of the variety has been furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate. The undersigned owner(s) is(are) the owner of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 42, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act. Owner(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.					
SIGNATURE OF OWNER		SIGNATURE OF OWNER 			
NAME (Please print or type)		NAME (Please print or type) <b>Jeff Jacobsen</b>			
CAPACITY OR TITLE <b>Dean &amp; Director, COA/AES</b>		DATE		CAPACITY OR TITLE <b>Dean &amp; Director, COA/AES</b>	
				DATE <b>9/12/05</b>	

## INSTRUCTIONS

200500347

**GENERAL:** To be effectively filed with the Plant Variety Protection Office (PVPO), **ALL** of the following items must be **received** in the PVPO: (1) Completed application form signed by the owner; (2) completed exhibits A, B, C, E; (3) for a seed reproduced variety at least 2,500 viable untreated seeds, for a hybrid variety at least 2,500 untreated seeds of each line necessary to **reproduce** the variety, or for tuber reproduced varieties verification that a viable (*in the sense that it will reproduce an entire plant*) tissue culture will be deposited and maintained in an approved public repository; (4) check drawn on a U.S. bank for \$3,652 (\$432 filing fee and \$3,220 examination fee), payable to "Treasurer of the United States" (See Section 97.6 of the Regulations and Rules of Practice.) Partial applications will be held in the PVPO for not more than 90 days, then returned to the applicant as unfilled. Mail application and other requirements to Plant Variety Protection Office, AMS, USDA, Room 401, NAL Building, 10301 Baltimore Avenue, Beltsville, MD 20705-2351. **Retain one copy for your files.** All items on the face of the application are self explanatory unless noted below. Corrections on the application form and exhibits must be initialed and dated. **DO NOT** use masking materials to make corrections. If a certificate is allowed, you will be requested to send a check payable to "Treasurer of the United States" in the amount of \$432 for issuance of the certificate. Certificates will be issued to owner, not licensee or agent.

Plant Variety Protection Office

Telephone: (301) 504-5518

FAX: (301) 504-5291

Homepage: <http://www.ams.usda.gov/science/pvpo/pvpindex.htm>

To avoid conflict with other variety names in use, the applicant must check the appropriate recognized authority and provide evidence that name has been cleared by the appropriate recognized authority before the Certificate of Protection is issued. For example, for agricultural and vegetable crops, contact: Seed Branch, AMS, USDA, 10301 Baltimore Avenue, Suite 401 NAL Building, Beltsville, MD 20705. Telephone: (301) 504-5682 <http://www.ams.usda.gov/lsg/seed.htm>.

## ITEM

- 19a. Give: (1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method;  
(2) the details of subsequent stages of selection and multiplication;  
(3) evidence of uniformity and stability; and  
(4) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified
- 19b. Give a summary of the variety's distinctness. Clearly state how this application variety may be distinguished from all other varieties in the same crop. If the new variety is most similar to one variety or a group of related varieties:  
(1) identify these varieties and state all differences objectively;  
(2) attach statistical data for characters expressed numerically and demonstrate that these are clear differences; and  
(3) submit, if helpful, seed and plant specimens or photographs (prints) of seed and plant comparisons which clearly indicate distinctness.
- 19c. Exhibit C forms are available from the PVPO Office for most crops; specify crop kind. Fill in Exhibit C (Objective Description of Variety) form as completely as possible to describe your variety.
- 19d. Optional additional characteristics and/or photographs. Describe any additional characteristics that cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the characteristics that are difficult to describe, such as plant habit, plant color, disease resistance, etc.
- 19e. Section 52(5) of the Act requires applicants to furnish a statement of the basis of the applicant's ownership. An Exhibit E form is available from the PVPO.
20. If "Yes" is specified (*seed of this variety be sold by variety name only, as a class of certified seed*), the applicant **MAY NOT** reverse this affirmative decision after the variety has been sold and so labeled, the decision published, or the certificate issued. However, if "No" has been specified, the applicant may change the choice. (See Regulations and Rules of Practice, Section 97.103).
23. See Sections 41, 42, and 43 of the Act and Section 97.5 of the regulations for eligibility requirements.
24. See Section 55 of the Act for instructions on claiming the benefit of an earlier filing date.

**22. CONTINUED FROM FRONT** (Please provide a statement as to the limitation and sequence of generations that may be certified.)

**23. CONTINUED FROM FRONT** (Please provide the date of first sale, disposition, transfer, or use for each country and the circumstances, if the variety (including any harvested material) or a hybrid produced from this variety has been sold, disposed of, transferred, or used in the U.S. or other countries.)

U.S.-September 20, 2004

**24. CONTINUED FROM FRONT** (Please give the country, date of filing or issuance, and assigned reference number, if the variety or any component of the variety is protected by intellectual property right (Plant Breeder's Right or Patent).)

U.S. Patent 5,369,022. Filed Sept. 17, 1993. Issued Nov. 29, 1994. Assignee: BASF Agrochemical Products, B.V. (formerly American Cyanamid Company).

**NOTES:** It is the responsibility of the applicant/owner to keep the PVPO informed of any changes of address or change of ownership or assignment or owner's representative during the life of the application/certificate. The fees for filing a change of address; owner's representative; ownership or assignment; or any modification of owner's name is specified in Section 97.175 of the regulations. (See Section 101 of the Act, and Sections 97.130, 97.131, 97.175(h) of the Regulations and Rules of Practice.)

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 1.4 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, sexual orientation, marital or family status, political beliefs, parental status, or protected genetic information. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotope, etc.) should contact USDA's TARGET Center at 202-720-2600 (voice and TDD).

To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC 20250-9410 or call 202-720-5964 (voice and TDD). USDA is an equal opportunity provider and employer.

**Exhibit A****Origin & Breeding History of MT1159CL**

'MT1159CL', a Clearfield® hard red winter wheat (*Triticum aestivum* L.) with tolerance to imazamox herbicide was developed by the Montana Agricultural Experiment Station and exclusively licensed to Westbred, LLC in September 2004. MT1159CL is a doubled haploid selection from the cross, FS2/Tiber made in 1997. The wheat germplasm line FS2 was developed by BASF Corporation (formerly American Cyanamid) using sodium azide induced mutagenesis of the French wheat cultivar 'Fidel' to obtain tolerance to the imidazolinone class of herbicides. Tiber is a well adapted, high quality hard red winter wheat that has been a leading cultivar in Montana since its release in 1988.

Doubled-haploid (DH) lines were developed from F<sub>1</sub> plants in 1998 using the wheat x maize (*Zea mays* L.) hybridization method. Herbicide-tolerant DH lines were identified following treatment with imazamox herbicide in the greenhouse in 1999. In 1999-2000, 29 DH selections were grown in non-replicated 4-row plots at Fort Ellis, MT, and treated with imazamox herbicide (52.5 g a.i. ha<sup>-1</sup>) to confirm herbicide tolerance and characterize line for other agronomic traits. Based on agronomic appearance, herbicide tolerance, uniformity, and milling and baking quality, three DH lines were selected and bulk harvested in the summer of 2000. Ten heads were also taken from each selected line prior to harvest. MT1159CL was assigned experimental number MTCL01159 and subsequently evaluated in Montana Preliminary C (2001), Westbred Preliminary (2003), Montana Intrastate (2004 to 2005), and Off-station (2004 to 2005) yield trials. Quality has been evaluated in multi-location Montana trials since 2003.

Seed increase of MT1159CL was initiated in 2001 when a uniform 10 member headrow family of MTCL01159 was harvested in bulk at Fort Ellis in 2001. In 2002, the seed was further increased in a 4-row strip approximately 60 m long treated with imazamox herbicide at the 2X rate (105 g a.i. ha<sup>-1</sup>). The increased was rogued carefully to remove any phenotypic variants. Breeder seed was produced in 2003 at Yuma, AZ.

MT1159CL is a doubled haploid line. The cultivar has been shown to be true-breeding across multiple generations and environments. MT1159CL has been observed to be stable and uniform across multiple locations from 1999 to 2005 (six generations). The line is phenotypically uniform with exception that it contains a white-chaffed, imidazolinone-tolerant variant at the frequency of 1 per 10,000 plants.

Foundation seed of MT1159CL will be maintained by the Montana Agricultural Experiment Station, Montana State University, Bozeman, MT 59717.

200500347

## Exhibit B revised

## Statement of Distinctness

MT1159CL is an imidazolinone-tolerant hard red winter wheat cultivar most similar to 'Above', an imidazolinone-tolerant hard red winter wheat cultivar developed and released by Colorado State University. Both MTCL1159CL and Above contain the *Als1* gene which confers tolerance to the herbicide 'Beyond' (imidazolinone class) and have similar tolerance to Beyond herbicide. MT1159CL and Above are both semi-dwarf cultivars but are distinctly different in appearance and maturity. MT1159CL has tan glumes and chaff while Above has white glumes and chaff. MT1159CL is significantly later in heading than Above. MT1159CL headed an average of 6.7 days (range 4.7 to 8.5 days) later than Above at seven 2005 Montana performance testing locations (Table B1).

Table B1. Heading dates of MT1159CL and Above winter wheat cultivars in replicated yield trials at seven Montana locations in 2005.

Location	MT1159CL	Above	LSD 0.05
	----- Days from January 1 -----		
Bozeman	171.2	166.0	0.8
Havre	162.9	154.4	2.5
Sidney	164.3	156.3	1.5
Williston, ND	160.2	153.3	1.6
Kalispell	154.7	150.0	2.0
Moccasin	172.3	166.4	1.1
Huntley	159.3	152.0	1.0
Mean	163.6	156.9	---

REPRODUCE LOCALLY. Include form number and date on all reproductions.

Form Approved OMB NO 0581-0055

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 2.5 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, sexual orientation, marital or family status, political beliefs, parental status, or protected genetic information. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at 202-720-2600 (voice and TDD).

To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC 20250-9410 or call 202-720-5964 (voice and TDD). USDA is an equal opportunity provider and employer.

U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE  
SCIENCE AND TECHNOLOGY  
PLANT VARIETY PROTECTION OFFICE  
BELTSVILLE, MD 20705

Exhibit C

OBJECTIVE DESCRIPTION OF VARIETY  
Wheat (*Triticum* spp.)

NAME OF APPLICANT(S) Montana Agricultural Experiment Station	TEMPORARY OR EXPERIMENTAL DESIGNATION MTCL01159	VARIETY NAME MT1159CL
ADDRESS (Street and No. or RD No., City, State, Zip Code and Country) 202 Linfield Hall Montana State University Bozeman, MT 59717		FOR OFFICIAL USE ONLY PVPO NUMBER 200500347

PLEASE READ ALL INSTRUCTIONS CAREFULLY:

Place the appropriate number that describes the varietal character of this variety in the boxes below. Place a zero in the first box (e.g.,    or   ) when number is either 99 or less or 9 or less respectively. Data for quantitative plant characters should be based on a minimum of 100 plants. Comparative data should be determined from varieties entered in the same trial. Royal Horticultural Society or any recognized color standard may be used to determine plant colors; designate system used: \_\_\_\_\_ Please answer all questions for your variety; lack of response may delay progress of your application.

1. KIND:

- 1 = Common  
2 = Durum  
3 = Club  
4 = Other (Specify) \_\_\_\_\_

2. VERNALIZATION:

- 1 = Spring  
2 = Winter  
3 = Other (Specify) \_\_\_\_\_

3. COLEOPTILE ANTHOCYANIN:

- 1 = Absent 2 = Present

4. JUVENILE PLANT GROWTH:

- 1 = Prostrate 2 = Semi-erect 3 = Erect

5. PLANT COLOR: (boot stage)

- 1 = Yellow-Green  
2 = Green  
3 = Blue-Green

6. FLAG LEAF: (boot stage)

- 1 = Erect 2 = Recurved  
 1 = Not Twisted 2 = Twisted  
 1 = Wax Absent 2 = Wax Present

7. EAR EMERGENCE:

- Number of Days (Average)  
  Number of Days Earlier Than \* Tiber, Neeley, Morgan  
Same As \* BigSky  
  Number of Days Later Than \* CDC Falcon  
\*Relative to a PVPO-Approved Commercial Variety Grown in the Same Trial

8. ANTHOR COLOR:

- 1 = Yellow 2 = Purple

## 9. PLANT HEIGHT: (from soil to top of head, excluding awns)

200500347

0 8 1

cm (Average)

0 3

cm Taller Than

CDC Falcon

Same As

Pryor, Wahoo

1 4

cm Shorter Than

Tiber

## 10. STEM:

## A. ANTHOCYANIN

1

1 = Absent 2 = Present

## B. WAXY BLOOM

1

1 = Absent 2 = Present

## C. HAIRINESS (last internode of rachis)

1

1 = Absent 2 = Present

## D. INTERNODE

2

1 = Hollow

2 = Semi-solid

3 = Solid

4

Number of Nodes

## E. PEDUNCLE

1

1 = Erect

2 = Recurved

3 = Semi-erect

1 4

cm Length

## F. AURICLE

2

Anthocyanin:

1 = Absent

2 = Present

1

Hair:

1 = Absent

2 = Present

## 11. HEAD: (At Maturity)

## A. DENSITY

2

1 = Lax

2 = Middense (Laxidense)

3 = Dense

## B. SHAPE

1

1 = Tapering

2 = Strap

3 = Clavate

4 = Other (Specify) \_\_\_\_\_

## C. CURVATURE

1

1 = Erect

2 = Inclined

3 = Recurved

## D. AWNEDNESS

4

1 = Awnless

2 = Apically Awnletted

3 = Awnletted

4 = Awned

## 12. GLUMES: (At Maturity)

## A. COLOR

2

1 = White

2 = Tan

3 = Other (Specify) \_\_\_\_\_

## B. SHOULDER

1

1 = Wanting

2 = Oblique

3 = Rounded

4 = Square

5 = Elevated

6 = Apiculate

7 = Other (Specify) \_\_\_\_\_

## C. SHOULDER WIDTH

1

1 = Narrow

2 = Medium

3 = Wide

## D. BEAK

3

1 = Obtuse

2 = Acute

3 = Acuminate

## E. BEAK WIDTH

1

1 = Narrow

2 = Medium

3 = Wide

## F. GLUME LENGTH

3

1 = Short (ca. 7mm)

2 = Medium (ca. 8mm)

3 = Long (ca. 9mm)

## G. WIDTH

2

1 = Narrow (ca. 3mm)

2 = Medium (ca. 3.5mm)

3 = Long (ca. 4mm)

## 13. SEED:

## A. SHAPE

- ☐ 1 = 1 = Ovate  
2 = Oval  
3 = Elliptical

## B. CHEEK

- ☐ 1 = 1 = Rounded  
2 = Angular

## C. BRUSH

- ☐ 2 = 1 = Short  
2 = Medium  
3 = Long  
1 = Not Collared  
2 = Collared

## D. CREASE

- ☐ 2 = 1 = Width 60% or less of Kernel  
2 = Width 80% or less of Kernel  
3 = Width Nearly as Wide as Kernel  
1 = Depth 20% or less of Kernel  
2 = Depth 35% or less of Kernel  
3 = Depth 50% or less of Kernel

## E. COLOR

- ☐ 3 = 1 = White  
2 = Amber  
3 = Red  
4 = Other (Specify) \_\_\_\_\_

## F. TEXTURE

- ☐ 1 = 1 = Hard  
2 = Soft  
3 = Other (Specify) \_\_\_\_\_

## G. PHENOL REACTION (See Instructions)

- ☐ 0 = 1 = Ivory  
2 = Fawn  
3 = Light Brown  
4 = Dark Brown  
5 = Black

Not evaluated

## H. SEED WEIGHT

- ☐ 3 ☐ 9 g/1000 Seed (Whole number only)

## I. GERM SIZE

- ☐ 2 = 1 = Small  
2 = Midsize  
3 = Large

## 14. DISEASE: PLEASE INDICATE THE SPECIFIC RACE OR STRAIN TESTED

(0 = Not Tested 1 = Susceptible 2 = Resistant 3 = Intermediate 4 = Tolerant)

- |   |   |
|---|---|
| <input type="checkbox"/> 1 Stem Rust ( <i>Puccinia graminis</i> f. sp. <i>tritici</i> ) | <input type="checkbox"/> 1 Leaf Rust ( <i>Puccinia recondita</i> f. sp. <i>tritici</i> )                      |
| <input type="checkbox"/> 2 Stripe Rust ( <i>Puccinia striiformis</i> )                  | <input type="checkbox"/> 0 Loose Smut ( <i>Ustilago tritici</i> )   |
| <input type="checkbox"/> 0 Tan Spot ( <i>Pyrenophora tritici-repentis</i> )             | <input type="checkbox"/> 0 Flag Smut ( <i>Urocystis agropyri</i> )  |
| <input type="checkbox"/> 0 Halo Spot ( <i>Selenophoma donacis</i> )                     | <input type="checkbox"/> 0 Common Bunt ( <i>Tilletia tritici</i> or <i>T. laevis</i> )                        |
| <input type="checkbox"/> 0 <i>Septoria nodorum</i> (Glume Blotch)                       | <input type="checkbox"/> 0 Dwarf Bunt ( <i>Tilletia controversa</i> )   |
| <input type="checkbox"/> 0 <i>Septoria avenae</i> (Speckled Leaf Disease)               | <input type="checkbox"/> 0 Karnal Bunt ( <i>Tilletia indica</i> )   |
| <input type="checkbox"/> 0 <i>Septoria tritici</i> (Speckled Leaf Blotch)               | <input type="checkbox"/> 0 Powdery Mildew ( <i>Erysiphe graminis</i> f. sp. <i>tritici</i> )                  |
| <input type="checkbox"/> 0 Scab ( <i>Fusarium</i> spp.)                                 | <input type="checkbox"/> 0 "Snow Molds"   |
| <input type="checkbox"/> 0 "Black Point" (Kernel Smudge)                                | <input type="checkbox"/> 0 Common Root Rot ( <i>Fusarium</i> , <i>Cochliobolus</i> and <i>Bipolaris</i> spp.) |
| <input type="checkbox"/> 0 Barley Yellow Dwarf Virus (BYDV)                             | <input type="checkbox"/> 0 Rhizoctonia Root Rot ( <i>Rhizoctonia solani</i> )                                 |
| <input type="checkbox"/> 0 Soilborne Mosaic Virus (SBMV)                                | <input type="checkbox"/> 0 Black Chaff ( <i>Xanthomonas campestris</i> pv. <i>translucens</i> )               |
| <input type="checkbox"/> 0 Wheat Yellow (Spindle Streak) Mosaic Virus                   | <input type="checkbox"/> 0 Bacterial Leaf Blight ( <i>Pseudomonas syringae</i> pv. <i>syringae</i> )          |
| <input type="checkbox"/> 0 Wheat Streak Mosaic Virus (WSMV)                             | <input type="checkbox"/> Other (Specify) _____  |
| <input type="checkbox"/> Other (Specify) _____  | <input type="checkbox"/> Other (Specify) _____  |
| <input type="checkbox"/> Other (Specify) _____  | <input type="checkbox"/> Other (Specify) _____  |
| <input type="checkbox"/> Other (Specify) _____  | <input type="checkbox"/> Other (Specify) _____  |

## 15. INSECT: (0 = Not Tested 1 = Susceptible 2 = Resistant 3 = Intermediate 4 = Tolerant)

PLEASE SPECIFY BIOTYPE (where needed)

- |  |  |
|--|--|
| <input type="checkbox"/> 0 Hessian Fly ( <i>Mayetiola destructor</i> )   | <input type="checkbox"/> Other (Specify) _____ |
| <input type="checkbox"/> 3 Stem Sawfly ( <i>Cephus</i> spp.)             | <input type="checkbox"/> Other (Specify) _____ |
| <input type="checkbox"/> 0 Cereal Leaf Beetle ( <i>Oulema melanopa</i> ) | <input type="checkbox"/> Other (Specify) _____ |



15. INSECT: (continued)    0 = Not Tested    1 = Susceptible    2 = Resistant    3 = Intermediate    4 = Tolerant

PLEASE SPECIFY BIOTYPE (Where Needed)

<input type="checkbox"/> 0	Russian Aphid ( <i>Diuraphis noxia</i> )	<input type="checkbox"/>	Other (Specify) _____
<input type="checkbox"/> 0	Greenbug ( <i>Schizaphis graminum</i> )	<input type="checkbox"/>	Other (Specify) _____
<input type="checkbox"/> 0	Aphids	<input type="checkbox"/>	Other (Specify) _____

16. ADDITIONAL INFORMATION ON ANY ITEM ABOVE, OR GENERAL COMMENTS:

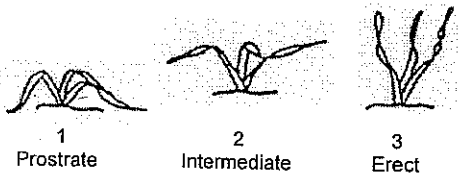

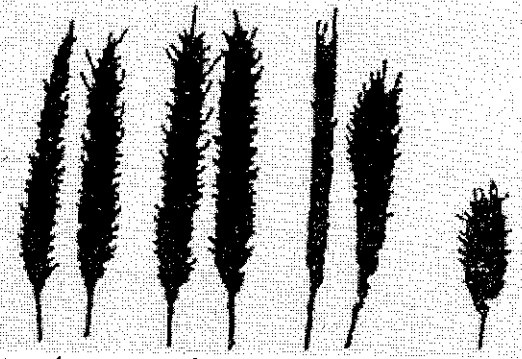
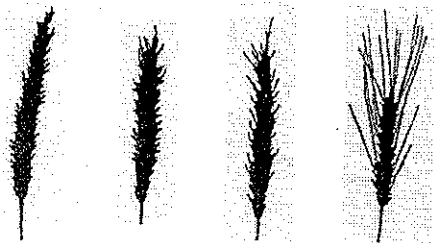
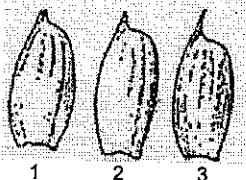
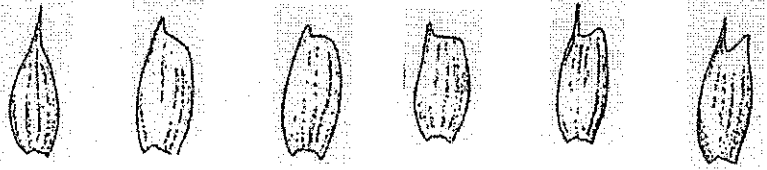
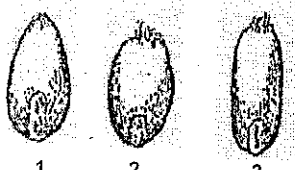
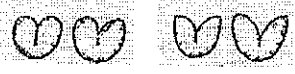
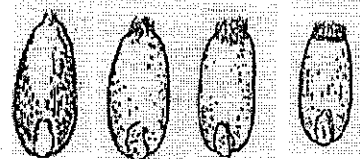



Resistant to imidazolinone herbicides.

# WHEAT DESCRIPTOR ILLUSTRATIONS

Exhibit C (Wheat)

Section Numbers Correspond to the Numbers of the Sections on the Form

200500347

<p>4. EARLY PLANT GROWTH HABIT:</p>  <p>1 Prostrate      2 Intermediate      3 Erect</p>		<p>10. STEM INTERNODE X-SECTION:</p>  <p>1 Hollow      2 Semi-solid      3 Solid</p>		<p>11. SPIKE SHAPE:</p>  <p>1 Tapering      2 Oblong      3 Clavate      4 Elliptical</p>			
<p>11. AWNEDNESS:</p>  <p>1 Awnless      2 Apically Awnleted      3 Awnleted      4 Awned</p>		<p>12. BEAK SHAPE:</p>  <p>1 Obtuse      2 Acute      3 Acuminate</p>		<p>12. SHOULDER SHAPE:</p>  <p>1 Wanting      2 Oblique      3 Rounded      4 Square      5 Elevated      6 Apiculate</p>			
<p>13. SEED SHAPE:</p>  <p>1 Ovate      2 Oval      3 Elliptical</p>		<p>13. CHEEK SHAPE:</p>  <p>1 Rounded      2 Angular</p>				<p>13. BRUSH SIZE:</p>  <p>1 Small      2 Midsized      3 Large      4 Collared</p>	
<p>13. GERM (EMBRYO) SIZE:</p>  <p>1 Small      2 Midsized      3 Large</p>		<p>13. SEED CREASE WIDTH:</p>  <p>1 Narrow      2 Mid-wide      3 Wide</p>		<p>13. SEED CREASE DEPTH:</p>  <p>1 Shallow      2 Mid-Deep      3 Deep</p>			

**Exhibit D revised****Additional Description of MT1159CL Wheat**

MT1159CL is a medium maturity, semi-dwarf hard red winter wheat. Heading date of MT1159CL is approximately two days earlier than Tiber and Neeley under Montana conditions. MTCL1159CL is approximately three inches shorter than Neeley and six inches shorter than Tiber at maturity and has good straw strength and resistance to lodging. MT1159CL has only moderate winter hardiness and is not well adapted to severe winters of northern and north-eastern Montana. Juvenile plant growth is semi-erect. Plant color at boot stage is yellow green. The flag leaf at boot stage is large, wide, and erect. Heads are awned, erect, and mid-dense. Glume and head color is tan. Coleoptile length of MT1159CL is relatively long, comparable to parental cultivar Tiber. MT1159CL has low yield potential, medium test weight, and fair end-use qualities. Grain protein content is relatively high, comparable to Tiber winter wheat. Mean grain yield and agronomic characteristics of MT1159CL in trials conducted in 2004 and 2005 is shown in Table D1. Mean milling and baking data for MT1159CL and check cultivars from nine locations in 2004 is shown in Table D2.

200500347

## Supplement to Exhibit D

Table D1. 2004-2005 Field performance means for MT1159CL and check cultivars.  
MT Intrastate and Off-Station data - 43 location/years

Cultivar/Line	Grain yield	Test weight	Winter survival	Heading date	Plant height	Grain protein
Location/years	42	37	7	19	39	26
	bu/acre	lb/bu	%	days from 1 Jan.	in	%
Yellowstone	63.5**	59.2	57.0	163.1	33.8	12.6
Pryor	60.9*	59.4	53.9	163.0	31.3	12.0
Wahoo	58.8	58.7	57.8	158.6	31.3	12.6
Promontory	57.6	61.2*	40.9	161.5	32.8	12.5
CDC Falcon	57.0	59.5	60.9	161.3	30.6	12.4
Jagalene	56.8	61.7**	50.9	158.4	31.0	12.8
Jerry	56.4	59.3	64.7**	162.3	36.3	12.9
Rocky	55.9	61.0*	56.5	159.9	35.8	12.5
Neeley	55.7	59.0	51.4	164.3	34.4	12.6
Paul	54.7	57.8	60.3	163.1	32.0	12.5
Morgan	54.3	59.2	64.1	164.4	35.1	12.5
Tiber	53.6	60.3	53.4	163.9	37.4	12.9
Genou	53.4	60.0	51.9	162.5	34.3	13.0
BigSky	52.8	59.9	59.5	162.2	36.2	13.2
Vanguard	52.2	60.1	48.4	161.9	34.9	13.4*
NuSky (HWW)	51.6	59.0	55.1	164.0	34.7	12.6
Rampart	50.3	60.0	42.9	162.2	34.2	13.7**
MT1159CL (IMI)	47.7	58.2	32.8	162.4	31.8	13.0
Average	55.5	59.6	54.5	162.1	33.5	12.8
LSD (0.05)	3.4	0.8	8.7	0.8	0.7	0.4
C.V. (%)	14.3	2.8	15.0	0.8	4.6	5.2

200500347

**Table D2. Milling & Baking characteristics of MT1159CL and check cultivars, 2004.**

<b>Variety</b>	<b>Flour yield</b>	<b>Flour protein</b>	<b>Mixo. Mixo. time</b>	<b>Mixo. abs.</b>	<b>Baking mix time</b>	<b>Baking abs.</b>	<b>Loaf volume</b>
<b>Loc/yr</b>	9	9	9	9	9	9	9
	%	%	min	%	min	%	cc
<b>MT1159CL</b>	<b>71.2</b>	<b>11.7</b>	<b>2.3</b>	<b>55.5</b>	<b>3.6</b>	<b>65.4</b>	<b>945</b>
<b>Above</b>	<b>67.7</b>	<b>11.5</b>	<b>2.1</b>	<b>55.7</b>	<b>3.1</b>	<b>65.5</b>	<b>893</b>
<b>Tiber</b>	<b>67.8</b>	<b>11.7</b>	<b>3.0</b>	<b>58.6</b>	<b>5.5</b>	<b>68.9</b>	<b>1023</b>
<b>LSD (0.05)</b>	<b>1.9</b>	<b>ns</b>	<b>0.3</b>	<b>0.7</b>	<b>0.8</b>	<b>1.0</b>	<b>56</b>
<b>CV %</b>	<b>2.8</b>	<b>4.5</b>	<b>11.0</b>	<b>1.3</b>	<b>19.9</b>	<b>1.5</b>	<b>5.9</b>

U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE**EXHIBIT E**  
**STATEMENT OF THE BASIS OF OWNERSHIP**

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). The information is held confidential until the certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S)  Montana Agricultural Experiment Station	2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER  MTCL01159	3. VARIETY NAME  MT1159CL
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP, and Country)  202 Linfield Hall Montana State University Bozeman, MT 59717	5. TELEPHONE (Include area code)  (406) 994-3681	6. FAX (Include area code)  (406) 994-6579
7. PVPO NUMBER		200500347

8. Does the applicant own all rights to the variety? Mark an "X" in the appropriate block. If no, please explain.

☒ YES☐ NO

9. Is the applicant (individual or company) a U.S. national or a U.S. based company? If no, give name of country.

☒ YES☐ NO

10. Is the applicant the original owner?

☒ YES☐ NOIf no, please answer one of the following:

a. If the original rights to variety were owned by individual(s), is (are) the original owner(s) a U.S. National(s)?

☐ YES☐ NO

If no, give name of country

b. If the original rights to variety were owned by a company(ies), is (are) the original owner(s) a U.S. based company?

☐ YES☐ NO

If no, give name of country

11. Additional explanation on ownership (Trace ownership from original breeder to current owner. Use the reverse for extra space if needed):

**PLEASE NOTE:**

Plant variety protection can only be afforded to the owners (not licensees) who meet the following criteria:

1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.
2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.
3. If the applicant is an owner who is not the original owner, both the original owner and the applicant must meet one of the above criteria.

The original breeder/owner may be the individual or company who directed the final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definitions.

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 0.1 hour per response, including the time for reviewing the instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, sexual orientation, marital or family status, political beliefs, parental status, or protected genetic information. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at 202-720-2600 (voice and TDD).

To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, D.C. 20250-9410 or call (202) 720-5964 (voice and TDD). USDA is an equal opportunity provider and employer.